REMARKS

In the final office action the Examiner maintained the rejection of claims 1-3, 7-12 and 16-29 under 35 U.S.C. §103(a) as being rendered obvious, and therefore unpatentable, by U.S. Patent No. 6,859,713 to Pallot. The Examiner indicated that Applicants have not explained the patentable distinction and the Examiner also asserted that the features upon which Applicant relies are not recited in the rejected claims. Applicants hereby present an explanation of the patentable distinction as it applies directly to the features in the language of independent claims 1, 12 and 21. Applicants respectfully assert that the independent claims and the claims that depend therefrom are not obvious in view of the Pallot reference.

The present invention is directed to a computer model that is used to test the dynamics of an automotive vehicle. The method is specifically directed to a vehicle model that is operated in an aggressive or limit-seeking manner. This is significantly different than current vehicle models that are directed to maintaining a vehicle within predetermined, or otherwise known, operating conditions that are directed to avoiding undesired steering conditions such as understeer and oversteer. Current technology in computer models is not typically directed to test the limits of control of a vehicle as taught and claimed in the present invention. Current computer models are known to produce undesirable results when the model exceeds "known" limits. For example, current technology generates undesirable steering wheel angles to compensate for variations in the desired path when the vehicle is being operated in an aggressive manner. Therefore the results are not usable and are useless in the assessment of vehicle handling for such events. The present invention provides meaningful results, specifically under conditions when the vehicle model is pushed aggressively, and purposely driven in the presence of understeer.

In order to accomplish this, the present invention teaches, and claims in claim 1(ii)(d), claim 12(e); that when the vehicle computer model is determined to be understeering, the vehicle computer model is operated with the initial steering wheel angle until a new steering wheel angle is determined such that plowing or slipping is reduced, and in claim 21(d); that when the vehicle computer model is determined to be understeering, operating the vehicle computer model at one of a plurality of steering wheel angles until a later one of the plurality of steering wheel angles is determined such that plowing or slipping forward is thereby reduced.

Understeering occurs when the vehicle does not respond to a change in the steering wheel angle. According to the inventive subject matter, when the computer model is deemed to be understeering, the initial steering wheel angle is maintained. The computer model continues to operate with the initial steering wheel angle until a new steering wheel angle is determined and input. This is significantly different than the teachings in the Pallot reference.

The Pallot reference does not teach or disclose determination of understeer as claimed in the present invention. Column 8, line 35 to column 9, line 8 describes the phenomenon of tire saturation and the events that may occur when tire saturation takes place. However, it is respectfully asserted that the Pallot reference does not teach or disclose making a determination of understeer as claimed in the present invention. It is argued that the Pallot reference identifies a limit for axle force at which point tire saturation may occur. The Pallot reference describes the result of tire saturation as "one or more of the axles becoming incapable of developing the expected cornering force, and the vehicle will oversteer or understeer depending on whether the saturation involves the rear axle or the front axle. It is respectfully asserted that while the Pallot reference explains a potential consequence of tire saturation, one of which may be an understeer condition, it teaches identifying a limit for an axle force at which point tire saturation occurs. It is respectfully asserted that the reference does not teach or disclose the vehicle computer model determining understeering as taught and claimed in the present invention.

Notwithstanding the fact that Applicants assert that Pallot does not teach or disclose making a determination of understeer, the Pallot reference goes on to teach that upon reaching the axle load limit associated with tire saturation, the share of anti-rolling force developing by the axle whose cornering force reaches saturation is reduced. This reduction in anti-rolling force is accomplished by re-distributing load among the vehicle's axles, thereby preventing tire saturation and ultimately preventing the potential for understeer to occur. It is respectfully asserted that the Pallot reference is directed to avoiding understeer conditions through the process of setting limits for axle load and redistributing axle load upon determination of the axle load limit. According to the present invention, when the computer model is deemed to be understeering, the initial steering wheel angle is maintained which means that the computer model continues to operate with the initial steering wheel angle (i.e., in understeer) until a new steering wheel angle is determined and input. This is significantly different than the teachings in

the Pallot reference. The Examiner indicated that the Pallot reference discloses imposing a corrective mechanism to compensate for tire saturation before understeer can occur.

The Examiner indicated that Pallot discloses a corrective mechanism to compensate for tire saturation at Figure 1. However, the corrective mechanism is applied in response to a limit for tire saturation, and the reference further discloses that the correction is applied before understeer can occur, see column 8, lines 21-24. The correction mechanism involves an automatic response in the form of brakes, steering or axle load distribution is implemented to avoid undesired steering conditions.

In contrast, because the present invention is directed to a computer simulation model, the present invention allows the understeer condition to exist (operating said vehicle computer model at said initial steering wheel angle) until which point in time a new steering wheel angle is determined and applied to the computer model. This claimed feature is required in order to accomplish an objective of the present invention, which is to provide meaningful results relative to the computer model output when the vehicle model is pushed aggressively, and is driven with understeer and oversteer conditions. It is respectfully asserted that the Pallot reference does not teach or disclose allowing the vehicle to operate at the initial steering wheel angle (during which time the vehicle is deemed to be understeering) until a new steering wheel angle is determined such that plowing or slipping is reduced.

Applicants respectfully assert that the claims of the present invention are not obvious in view of the Pallot reference. Applicants respectfully request the Examiner withdraw the rejection of the claims under 35 U.S.C. §103.

CONCLUSION

In light of the above remarks, Applicants submit that the claims are in condition for allowance, and requests formal notice thereof. If a telephone conference would expedite allowance of the claims, the examiner may wish to telephone Applicants' Attorney at (480)200-2054.

If the USPTO determines that a fee is due, the Commissioner is hereby authorized to charge any additional fee to Deposit Account No. 06-1510.

Respectfully submitted,

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